

# Sacro Occipital Technique Research Conference

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## Vision Induced Chronic Low Back Pain: A Case Report

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**\* Vision Induced  
Chronic Low Back  
Pain: A Case Report**

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# Case History

- \* A 34-year-old white female patient presented with a history of low back pain that has been present for nearly two years.
- \* Her gynecologist referred her to the clinic for a musculoskeletal evaluation of her back pain.
- \* She stated that other than her back she “feels fine”.
- \* Her symptoms improved with rest and sleep and worsen as the day progresses.
- \* The pain is dull, achy, non-radiating and she points to her lower lumbar spine when asked its location.
- \* She rates the pain as an “8” out of 10, with 10 being most severe.



# Case History

- \* The patient denies any trauma associated with the onset and further denies any motor vehicle accidents, slips or falls, or other trauma.
- \* She stated that her back pain is “just getting worse”.
- \* When asked how long the pain had been present, the reply was “...2 years”.
- \* In questioning what else might have happened in the time period in her life she responded, “I can’t remember any trauma, but that’s when I had my bilateral lens implants”.
- \* The patient stated that the surgery was for her poor vision and that she had been able to see well since the surgery and had not needed corrective lenses to read the eye (Snellen) chart.
- \* She denies any other traumatic or pathologic visual problems including: amblyopia, anisometropia, diplopia, strabismus, glaucoma, ophthalmoplegia, pterygium, retinitis, or macular degeneration.





# Medical History

- \* Her predominant medical condition was recently diagnosed hypothyroidism with a recently diagnosed hormone imbalance.
- \* Surgically of note was the bilateral lens implants in 2006.
- \* Medication includes Iodine Plus tablets, 50 mg per day for hypothyroidism; progesterone cream, 0.1 mg daily applied topically.
- \* Aside from infrequent mild headaches her main musculoskeletal complaint is the chronic low back pain (L4-S1).



# Osteopathic Evaluation

- \* Her cranium was the area of the greatest restriction, with tissue texture changes noted at the suboccipital region
- \* The right occipitomastoid suture was restricted
- \* She had two mildly exaggerated kyphoses, focused around the cervicothoracic junction and T<sub>7</sub>
- \* C<sub>2</sub> is rotated right
- \* The thoracic outlet was restricted fascially in left rotation, C<sub>7</sub> (Extended, Rotated and Sidebent - Right) ERS<sub>R</sub>
- \* Right 1<sup>st</sup> rib exhalation somatic dysfunction
- \* Increased paravertebral muscular tension was noted bilaterally between T<sub>1</sub>-T<sub>5</sub> and L<sub>3</sub>-S<sub>1</sub>
- \* L<sub>5</sub> (Extended, Rotated and Sidebent - Right) ERS<sub>R</sub>
- \* Left superior innominate shear
- \* Left superior pubic shear
- \* Left/Right sacral torsion
- \* Right anteriorly rotated innominate



# Visual Evaluation

\* After an initial screen and repeated questioning about the back pain, the blinds in the exam room were closed and the patient was informed that the lights would be switched off. The patient was seated on the exam table, the lights were switched off and she was allowed to remain motionless for approximately 30 seconds in the darkened room. This experiment is a test for somatic dysfunction that was induced or exaggerated by light (visual somatic strain). When asked at the end of this period how her pain was, she replied, “It’s gone”. The lights were turned on and she was asked again about her back pain. She reported that it had returned. This experiment was repeated for a total of three times until the patient (and the physician) were convinced that her back pain was related to her eyes. She was then re-examined in the darkened room and, although her somatic dysfunction was still present, its severity was significantly lessened.



# Visual Examination

- \*The patient was examined cranially with her eyes closed in a darkened room. She was then examined with her eyes open in a lighted room. This was done to maximize the differences.
- \*The cranial rhythm presented with good amplitude in the darkened, eyes-closed exam, but was restricted in the lit, eyes-open exam.
- \*She was also noted to have a marked lateral strain, a minor cranial flexion, and increased tension in the suboccipital muscles present in the lit, eyes-open exam that was absent in the darkened, eyes-closed examination.





# Treatment

- \* Osteopathic manipulative therapy (OMT) OMT was performed to all areas listed above utilizing functional, balanced ligamentous tension, muscle energy, and facilitated positional release techniques. Cranium was treated with a combination of indirect and direct sutural and fluid techniques. The patient tolerated the treatment well.
- \* She was then evaluated for cranial strain with her eyes closed and covered to occlude any incoming light. The same evaluation was then performed with the eyes open and the results were compared. With her eyes closed and covered she was found to have no cranial strains present, as she had just undergone treatment to remove the above noted occipitomastoid strain. When the cover was removed and the eyes opened the patients' head immediately changed with noted strains of mild, but noticeable cranial extension, a mild right torsion, and a pronounced left lateral strain pattern. It was decided at this time to prescribe eyeglasses to neutralize the cranial strains. Utilizing ophthalmologic principles as they relate to Osteopathy in the Cranial Field the prescription that neutralized her cranial strains was:
  - \* OD: -0.12 sphere, DS (no astigmatism)
  - \* OS: -0.12 sphere, -1.12 x 77° cylinder



# Treatment

- \*The patient returned in two weeks with the new eyeglass prescription. She noted 80% symptomatic relief in lower back pain with this prescription prior to her entering the office. She noted that her pain had dropped to a “2” on a 10 scale.
- \*She was assessed cranially and the frames were fitted to her face using ophthalmologic principles - optical centers of the lenses were centered on the pupils by adjusting the nose pads (this corrected a small right torsion), temple arms were adjusted to keep the frames on the face (temple bend), face form was adjusted until the minor superior vertical strain was removed, the frames were “x’d” with the right lower portion of the lens moving toward the face to remove a small left sidebending rotation, and the pantoscopic tilt was adjusted to balance the muscle tension of the suboccipital muscles. The patient was instructed in care of the glasses and what to expect from the eyeglass treatment.



# Treatment

- \* The patient was then evaluated structurally and found to have the area of greatest restriction at L<sub>5</sub> (Extended, Rotated and Sidebent - Right) ERS<sub>R</sub>, followed by L<sub>3</sub> (Flexed, Rotated and Sidebent - Right) FRS<sub>L</sub>. These were treated utilizing functional methods. The patient left the office symptom free (pain now a “0”).
- \* At her second follow up appointment she reported that her headaches had not returned at all since the initial evaluation and treatment and that her back pain was greatly improved, but not completely resolved. Evaluation for this visit revealed that the pelvis was the area of greatest restriction, with a left superior innominate shear, left superior pubic shear, left/right sacral torsion and right anteriorly rotated innominate (it was noted that the end feel of this motion was markedly better than her initial visit). She was treated using a combination of high velocity/low amplitude, muscle energy and functional techniques. Her glasses were evaluated cranially and did not need further adjustment at that time.



# Discussion

\* In this case the patient's symptoms appeared to be a direct result of visually induced somatic strain influencing the cranial bones and causing headaches and chronic lower back pain. This seems reasonable because of the unresponsiveness to other forms of care, her response to the OMT and cranial care, comparative diagnosis evaluating patient with eyes open and closed or with and without light, ophthalmological prescriptive modification, and then modification of the eyeglasses.





# Discussion

- \* In this case the majority of the patient's symptoms appeared to be a direct result of visual somatic strain influencing the cranium and causing lower back pain and other complaints. It can be reasoned that her uncorrected eyestrain (astigmatism) resulted in abnormal tension (lateral strain) on the cranial bones that induced the strain patterns that resulted in the patient's lower back pain. This was noted by comparing the patient's cranial movement and strain patterns with the eyes closed and covered (no visual input) with the eyes open (visual input). The process of light entering the patient's visual processing system resulted in cranial strain (visual somatic strain). This strain was neutralized with eyeglass lens and frame adjustments. This gave the patient a cranium that no longer adversely influenced the lumbar and sacral area via the dura and its connections. The eyes were able to relax and not place abnormal tensions on the cranium.



# Discussion

\* With this patient the pantoscopic tilt of her glasses was a major influence on her postural muscle tension. Pantoscopic tilt (which is the degree of vertical tilt of the lens toward the cheek) <sup>22</sup>, can significantly influence the suboccipital muscles of the neck (and dura) directly <sup>23-4</sup>, and all of the other postural muscles indirectly. The prismatic effect from light entering the tilted lens of the eyeglasses causes light to deflect (prism) superiorly or inferiorly from the patient's perceived horizon line <sup>25</sup>. If the resulting light does not strike the fovea, the head corrects for this by moving the chin superiorly or inferiorly <sup>25</sup>. This correction results in a prismatic effect on the light entering the lens of the eye that opposes the external prism and returns the focus to the fovea <sup>25</sup>. The effect of this optical correction on the body are postural muscles that are now required to hold the head at a non-neutral location on the neck <sup>25</sup>. This prismatic effect and its influence on the body can be noticed in automobiles with sloping glass, eyeglasses, and even seemingly eutropic individuals whose fovea do not receive light from the perceived horizon <sup>25</sup>



# Discussion

- \*The anatomical relationship between the cranial and sacral dural attachments <sup>26</sup> could result in lower back pain <sup>27</sup> if the dura was placed under tension from the body's correction of a prismatic effect. When combined with the strain on the postural muscles from the non-neutral head tilt, lower back pain with a visual origin may result.
- \*This patient's case had an initial straightforward presentation, but her pain was not completely due to visual somatic strain. Even after visual correction her symptoms did not completely resolve. Subjectively her pain improved by 80%. Thus, the majority of her pain may be related to a visual somatic strain, since it resolved after prescribing and adjusting eyeglasses.



# Conclusion

\* This case study illustrated that a subset of patients may present with a clinical condition that either affects vision or the vision affects the condition. This dynamic interrelationship can be classified as a visual somatic strain. Functional assessments to evaluate for a visual somatic strain can be used to improve the neuromusculoskeletal head, neck, and postural kinematics where vision plays an important role. Collaborative efforts can be made to develop interdisciplinary co-treatment opportunities between osteopaths, chiropractors, podiatrists, ophthalmologists, dentists, and other allied professionals so that the sufferers of the effects of visual somatic strain can be helped and their quality of life improved. Greater research into this phenomenon should be investigated initially with case controlled and practice based studies.





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